Dear Institutional Board Representatives,

With the recent successful LBNF/DUNE CD-3A DOE review and the formal approval of the single-phase protoDUNE experiment by the CERN Research Board, the DUNE collaboration is strongly positioned for moving forward into 2016. An important recent development is the announcement of the incorporation of the WA105 effort (now referred to as dual-phase protoDUNE) within the organizational structure of the DUNE collaboration, allowing us to take maximum advantage of the synergies between the two efforts. Furthermore, the management teams for the single-phase and dual-phase protoDUNE activities at CERN are now in place and have started to take an active role in the organization of these efforts.

The aim of the collaboration is to collect charged-particle test beam data in the two protoDUNE detectors prior to the LHC long shutdown (LS2), which is currently scheduled for the beginning of 2019. To meet this aim, the collaboration needs to plan on having the detectors installed by early Summer 2018. This requires that detector components be delivered to CERN by the end of 2017, which is an aggressive goal. In order to achieve this goal, the collaboration will need to mobilize its resources on a very short timescale. It should be noted that the construction of the large-scale prototypes effectively represents the start of the construction phase for DUNE and this is significant step. The timely success of these two prototypes is a major goal for the collaboration.

CERN has now approved both prototypes. The dual-phase protoDUNE detector was approved before the formation of the DUNE collaboration, and the resources for its construction effectively have been secured. However, additional scientific resources are desired for its installation and operation. The proposal for the single-phase protoDUNE detector was submitted at the time when the DUNE collaboration was just forming. Consequently, the model for funding and institutional responsibilities is not fully developed and establishing this model is a major short-term goal.

In order to achieve these goals, it is essential to as quickly as possible engage the collaboration membership in the numerous activities associated with construction, commissioning, and operation of the two protoDUNE detectors. These efforts must occur in parallel with activities focusing on other important collaboration priorities, in particular the development and optimization of the DUNE far and near detector designs in preparation for the delivery of the Technical Design Report required for the upcoming CD-2/3 DOE review currently scheduled for late 2019.

To assist in the process of engaging the collaboration institutes in the construction, commissioning, and operation of the two protoDUNE detectors, we are asking each interested institution (or group of collaborating institutions) to fill out the attached expression of interest form. It is understood that the time scale for the prototyping activities is short and not all funding agencies will be able to participate in the context of capital contributions. However, we strongly encourage contributions of scientific and engineering resources from all collaboration institutes regardless.

Contributing to the prototyping activities at CERN provides a natural first step on the path towards future participation in activities associated with the construction, installation, and commissioning of the DUNE far detectors. Potential benefits are early, intellectual participation in the far detector designs and exposure to the construction techniques developed during the prototype development process.

The information provided in the attached expression of interest form will be shared with the DUNE detector coordinators and working group conveners, who will assist with the process of bringing together interested collaboration institutes to form the consortiums required to build, commission, and operate the various components of the protoDUNE detectors. In order to make this process as simple as possible, a list of potential items associated with each of the detectors to which one might consider contributing is provided. The type and level of resources associated with proposed contributions can also be simply identified using selections from the lists of options presented within. In all cases, proposed contributions that do not fit neatly within the presented options should be elaborated upon in the additional space provided.

Although this will be an ongoing process, we plan to initiate the process of forming the institutional consortiums responsible for the different components of the two protoDUNE detectors in the period directly following the upcoming collaboration meeting and therefore ask that each institution attempt to provide us with the requested information as soon as possible. Your assistance in this effort is greatly appreciated.

Sincerely,
The DUNE Management Team

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Expressions of Interest for contributions to construction, commissioning, and operations of the protoDUNE detectors

Name of Collaboration Institute (or Institutes): _____

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Note: If possible, please classify proposed interests in terms of the choices contained within the selection lists provided at the back end of this document. In cases where this is not possible, please use the additional space provided to elaborate.

Item 1: _____ Contribution Type: _____ Level of Resources: _____

Item 2: _____ Contribution Type: _____ Level of Resources: _____

Item 3: _____ Contribution Type: _____ Level of Resources: _____

Item 4: _____ Contribution Type: _____ Level of Resources: _____

Item 5: _____ Contribution Type: _____ Level of Resources: _____

Item 6: _____ Contribution Type: _____ Level of Resources: _____

Item 7: _____ Contribution Type: _____ Level of Resources: _____

Please Provide Any Additional Information Here: _____

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Detector Items:

Single-phase protoDUNE:

NP04-A: APA Planes

NP04-B: CPA Planes

NP04-C: HV Distribution

NP04-D: Field Cages

NP04-E: Ground Planes

NP04-F: Cold ASIC chips

NP04-G: Cold Motherboards

NP04-H: APA Readout Cables

NP04-I: Photon Detectors

NP04-J: PD Readout Cables

NP04-K: Cryostat Flanges

NP04-L: Warm APA readout electronics

NP04-M: PD readout electronics

NP04-N: Rack Infrastructure

NP04-O: Back-end DAQ computing

NP04-P: Run Control Software

NP04-Q: Slow Controls & Monitoring

NP04-R: Cryogenic Interfaces & Purity Monitors

NP04-S: Beam Windows & Beam Interfaces

NP04-T: TPC Calibration System

NP04-U: PD Calibration System

NP04-V: Cosmic Veto System

NP04-W: Computing Infrastructure

NP04-X: Detector Installation

NP04-Y: Detector Integration

Dual-phase protoDUNE:

NP02-A: LEM-Anode Sandwiches (LAS)

NP02-B: Charge Readout Planes (CRP)

NP02-C: CRP hanging system/movement

NP02-D: HV generation, HV feedthrough, and distribution

NP02-E: Purity monitoring

NP02-F: Drift Cage

NP02-G: Cathode

NP02-H: Signal chimneys and feedthroughs

NP02-I: Charge readout cold analog ASIC

NP02-J: Charge readout digital FE and timing distribution system

NP02-K: Charge readout cabling

NP02-L: Photomultipliers, WLS coating, and mechanical integration

NP02-M: Light readout cabling

NP02-N: Light readout digitization system

NP02-O: Other chimneys and feedthroughs

NP02-P: Rack Infrastructure/power supplies

NP02-Q: DAQ and Online Data Processing and Storage Facility

NP02-R: Run control software

NP02-S: Slow control system, sensors, and cabling

NP02-T: Cryogenic Interfaces

NP02-U: Beam Interfaces

NP02-V: Large area trigger counters

NP02-W: Computing Infrastructure

NP02-X: Detector Integration

NP02-Y: Engineering and Management

Contribution Types:

T1 – Design & Construction

T2 – Testing & Quality Assurance

T3 – Trial Assemblies & Vertical Slice Tests

T4 – Simulation Activities

T5 – Software Development

T6 – Installation Resources

T7- Commissioning Resources

Level of Resources:

R1 – Scientific Resources

R2 – Scientific & Engineering Resources

R3 – Scientific & Engineering Resources along with intention to seek funding for capital detector contributions